Abstract

Title: Influence of crank arm length on change of muscle tone of musculus triceps surae

Objectives: The aim of this thesis is to conclude the theoretical knowledge of this issue. The experiment is to uncover via the objective results, if the change of the crank arm length can influence the muscle tone of m.triceps surae and additionaly how much.

Methods: The measurement for this thesis was processed at Charles University at the Faculty of Physical Activity and Sports, measuring 8 volunteers. Via myotonometry, the biomechanic properties (stiffness and viscosity) of m.triceps surae were measured before and after the workout on a bicycle ergometer. These steps were repeated twice within a week with different crank arm length (170mm and 175mm). On the basis of the reaction of soft tissues on deformation from the tip of the myotonometer, the graphs are depicted, containing the hysteresis curve. We evaluate there two phenomenons – steepness and the content of the curves. They indicate biomechanic properties of soft tissues, resp. also the muscle tissue.

Results: The measurements from the 1st and 2nd week were compared. The results of 8 probands show that cycling as a physical activity changes stiffness and viscosity of m. triceps surae and has therefore an influence on the muscle tone. Considering larger increase of the muscle stiffness when using shorter crank arms, higher muscle tone is expected there. In view of the fact, that low amount of probands participated in measurements and with respect to interpersonal differences, general conclusion cannot be created.

Keywords: stiffness, viscosity, physical activity, myotonometry, cycling